

ABSTRACT OF THE DISCLOSURE

A highly thermally conductive and high strength net-shape moldable molding composition, with a thermal conductivity above 4 W/m²K and a strength of at least 15 ksi includes a polymer base matrix of, by volume, between 30 and 70 percent. A first highly thermally conductive filler of high modulus PITCH-based carbon, by volume, between 15 and 47 percent is provided in the composition that has a relatively high aspect ratio of at least 10:1. Also in the composition mixture is a second high strength filler of PAN-based carbon, by volume, between 10 and 35 percent that has a relatively high aspect ratio of 10:1 or more. Optionally, a third filler material of thermally conductive material with a relatively low aspect ratio of 5:1 or less may be included in the composition, by volume less than 10 percent, to improve the thermal conductivity and strength of the composition.